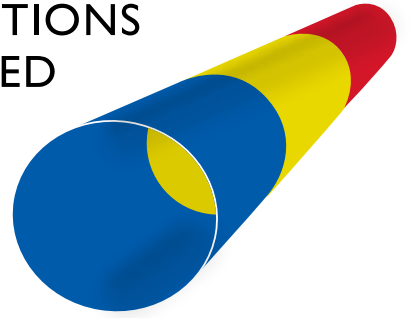


UTILITY INNOVATIONS
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UIS Power Push™ Pipe Pusher

63mm > 180mm & 200mm > 400mm Models

OPERATORS MANUAL

Leading the way in Utility Innovations

WELCOME

ABOUT US

Utility Innovations Solutions Limited (UIS Ltd) are specialists in manufacturing new innovations equipment for the utilities sector.

Within the staff employed at UIS Ltd, we have a wealth of experience in gas, water and electricity replacement, rehabilitation and reinforcement projects. Our experience has enabled us to target key areas and functions within utilities we feel we can improve upon with new innovations created and manufactured in house. Although we are a relatively new company, our progression over the short time has been rapid, with interest and demand for our products being very high.

The concept of UIS Ltd is to develop and advance innovation products that aid the process of replacing / renewing pipe utility work. A main aim is that all of our products should eradicate the inherent safety and technical faults encountered by existing methods. Aligned to safety, quality and engineering compliances there are also productivity benefits that allows our products to be compliant, versatile and proven speedier than alternative approved methods of works within utilities.

As our products have been developed through extensive trials, a detailed technical assessment has been made in which includes a detailed analysis of its performance against alternatives. The use of this equipment may be adapted to water, gas and cabling activities or any other use for the process of insertion and a / best practice / information is provided.



LEADING THE WAY IN UTILITY INNOVATIONS



UIS POWER PUSH™ PIPE PUSHER

SCOPE

The purpose of this operators manual is to demonstrate the safe working process and procedure of the UIS Power Push™ Pipe Pusher. In this operators manual you will find all of the safe working practices which are required for using the product for its designed purpose.



BENEFITS

- Safety
- Environmental migration
- Standard & custom made shims both for small 63mm>180mm model and large 200mm>400mm model
- Engineering compliant
- Multi-use attachment tool



GENERAL

The UIS Power Push™ is an attachment which fits onto an excavator and is used for inserting new polyethylene pipe on predominantly gas and water sites. The UIS Power Push™ may also be used for inserting cables through ducting, and can be used as an alignment clamp.

SYMBOLS & ABBREVIATIONS

UIS – Utility Innovations Solutions

PP – Power Push™

PPE – Personal Protective Equipment

1.5T – 1.5 Tonne Excavator

3T – 3 Tonne Excavator

5T – 5 Tonne Excavator

SDR Range – Standard Dimension Ratio

PE – Polyethylene



CONTENTS

- Chapter 1 - Design Basis & Specification
- Chapter 2 - Product Storage
- Chapter 3 - Shim System
- Chapter 4 - Operating Variables & Controls
- Chapter 5 - Start-up & Shut-down Procedure
- Chapter 6 - Equipment Operation
- Chapter 7 - Emergency Shut Down Procedure
- Chapter 8 - Inspection & Maintenance Procedures
- Chapter 9 - Safety
- Chapter 10 - Advisories & Control Measures
- Chapter 11 - Additional Extras - The UIS Level Head™
- Chapter 12 - Additional Extras - The UIS Pipe Entry Guide™
- Chapter 13 - Stock List / Spare & Replacement Parts



DESIGN BASIS & SPECIFICATIONS

The UIS Power Push™ has been designed, tested and implemented to suit the needs of small / large scale gas / water / electric mains replacement schemes.

SPECIFICATIONS & RECOMMENDATIONS

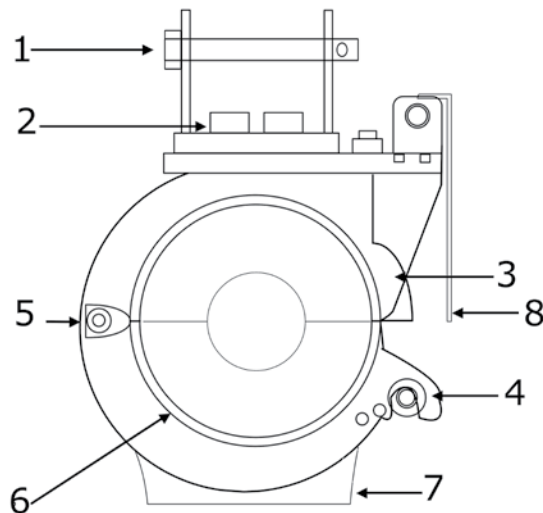
63mm > 180mm Pipe Pusher

- Weight – 46KG
- Height – 420mm
- Length – 310mm
- Width – 335mm
- Jaw Opening Width – 100mm
- Clamping Force – 1200KGF
- Recommended Working Pressure – 200 Bar Max
- Recommended Excavator Size:
 - Excavator Size – 1.5T
 - Pipe Diameter – 63mm/75mm/90mm/110mm&125mm
 - SDR Range – 11 & 17.6
 - Excavator Size – 3T
 - Pipe Diameter – 140mm/160mm/180mm
 - SDR Range – 11 & 17.6

200mm > 400mm Pipe Pusher

- Weight – 172KG
- Height – 600mm
- Length – 460mm
- Width – 590mm
- Jaw Opening Width – 180mm
- Clamping Force – 5000KGF
- Recommended Working Pressure – 200 Bar Max
- Recommended Excavator Size:
 - Excavator Size – 3T & 5T

1. Carrier Head Bracket & Pin
2. 4 Bolt Plate Connection
3. Hydraulic Cylinders
4. Lock Mechanism
5. Clamp Pivot Point
6. Shim Inserts
7. Flat Stand Plate
8. Ram Guard



PRODUCT STORAGE

The UIS Power Push™ comes stored in its own storage box which is where the product should be stored at all times when it is not in use. The lifting handle, which is also supplied with the unit, should be connected back to the head bracket to aid the process of lifting of the unit in and out of the storage box. Please remember that the UIS Power Push™ always equates to a two person lift.

The product will also come with a holdall bag or another storage box, which is for the storage of shim sets. These shims should always be stored in the bag / box when they are not being used by the UIS Power Push™.



SHIM SYSTEM

The UIS Power Push™ uses an interchangeable shim system which is made from recycled plastics. These shims are made internally to fit each size of pipe which will be inserted using the UIS Power Push™. The shims are fixed in using 5 countersunk bolts. The correct size of shims must be inserted for the pipe diameter being inserted to ensure the safe and correct use of the UIS Power Push™.

Using the incorrect sized shims for the diameter pipe being inserted may cause damage to the pipe wall and effect efficiency of the operation.



OPERATING VARIABLES AND CONTROLS

The operations of the UIS Power Push™ are all done through the operations of the excavator which the unit is attached to. These are the same controls that the excavator operator would use to operate the excavator in the same manner as digging an excavation or using an excavator mounted hydraulic breaker. The open and close function on the UIS Power Push™ is done through the use of the dual flow hydraulics on the excavator, which is either through a foot pedal on the excavator or through a button on the operating levers. This is dependent on the make and model of the excavator which the UIS Power Push™ is attached to as this may vary.



START-UP & SHUT-DOWN PROCEDURE

The UIS Power Push™ fits onto an excavator in the same way as an excavator bucket, hydraulic breaker or other attachments are fitted, which is via pins or a quick hitch system. The universal head bracket which is fitted to the UIS Power Push™ allows it to fit the majority of mini excavators. This UIS Power Push™ can also be fitted to different size excavators such as a 3T or 5T. Should the UIS Power Push™ be used on a 3T or 5T excavator, then UIS would need to be informed of the excavator type before operation begins to enable UIS to fit the correct head bracket to the excavator if not already done so.

The UIS Power Push™ is to be removed from its storage box using the lifting handle which is provided with the product. The unit is strictly a 2 person lift at all times. Once removed from the storage box, the product can be placed on the floor and then the lifting handle can be removed. The lifting handle is simply removed by taking out the 2 retaining clips / lynch pins holding it in place. The unit is now ready to be attached to the excavator.



START-UP & SHUT-DOWN PROCEDURE

continued

The excavator operator should line the dipper arm up inside the head bracket of the UIS Power Push™. Once lined up, the pins are ready to be inserted through the holes on the head bracket and the machine. Once these pins have been inserted, the retaining clips / lynch pins should be fitted to ensure the unit stays safely to the excavator.

The UIS Power Push™ is now ready to be fitted to the dual flow hydraulics of the excavator. The excavator should be turned off for this process, ensuring all pressures on the auxiliary hydraulic circuits have been released. When the excavator has been turned off, the quick release couplings

on the UIS Power Push™ can be fitted to those on the excavator. This is done by simply pushing the two couplings together and applying enough pressure to them so that they connect together, you will know that they are connected securely because there will be a small ball bearing that becomes visible. This operation is completed on both sides of the excavator arm. Normally there will be one male and one female coupling, but this can differ depending on the excavator make and model which the UIS Power Push™ is being fitted to. The excavator must have a dual flow hydraulic system to allow the UIS Power Push™ pipe pusher to work correctly.



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EQUIPMENT OPERATION

The excavator should be positioned at the edge of the excavation where the new polyethylene pipe / cable is going to be inserted from. Once the excavator is in the correct position with the UIS Power Push™ fitted, the new polyethylene pipe / cable can start to be inserted inside the carrier main / ducting. There must be a banks man in contact with the excavator operator at all times to ensure the safe insertion of the polyethylene pipe / cable. The UIS Power Push™ is used to push / pull the pipe into the carrier main / ducting, when the excavator arm is at the edge of the excavation and can no longer move and further back, the excavator operator then pushes the dual flow hydraulic pedal / button, which opens up the UIS Power Push™ allowing the machine driver to slide the excavator arm back up the pipe / cable as far as the excavator arm will reach. The dual flow hydraulics on the excavator are then used again this time closing the UIS Power Push™ which in turn grips the pipe. The same process is then repeated until the insertion length of pipe / cable is achieved.



EMERGENCY SHUT DOWN PROCEDURE

In case of any emergencies whilst using the UIS Power Push™, the most efficient way of shutting down all operations is to turn off the excavator using the key. This operation will stop all workings of the excavator and also stop the flow of hydraulic oil to the UIS Power Push™.



INSPECTION & MAINTENANCE PROCEDURES

The UIS Power Push™ should be inspected prior to every use using the following checks:

- Hydraulic Hoses and Connections should be checked for leaks
- Head Bracket / Pins for Head Bracket [correct pins for machine]
- Condition of Shims [free from debris]
- 4 Bolts on Head Bracket [all in place and secure]
- All 5 countersunk bolts in place for shims

Daily maintenance checks should be carried out in accordance with the 'UIS Operators Daily Inspection' checklist, which are supplied by UIS Ltd.

If you suspect that there are any problems / faults with your UIS Power Push™, then either contact your site supervisor or UIS Ltd direct on 0161 428 7959.

If you have the UIS Power Push™ on a long term hire, after a 6 month period the unit will be recalled by UIS Ltd for a 6 month inspection where the unit will be thoroughly checked and serviced by a competent person.

Operators Daily Inspection Check Sheet

Name:	
Week Commencing Date:	
Company:	
Plant Number:	
Item Description:	

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Note: The below checks MUST be completed prior to and during the use of the product. If any of the inspections result in fail, STOP and report it to your supervisor immediately prior to use.

Item:	Check to be performed:
-------	------------------------

Generic Inspection Checks

1	Hydraulic Rams	• Pressure test completed and satisfactory? • Visual condition satisfactory?
2	Hydraulic Hoses	• Pressure test completed and satisfactory? • Visual condition satisfactory? • Free from outer casing damage?
3	Hydraulic Connectors	• Correct connectors, which are free from dirt/debris?
4	Head Bracket	• Free from signs of damage/stress?
5	Swivel Unit	• Swivel unit free from obstructions and fit for use? • Head bracket in place and secure?



Sat	Sun

This is just a section of one of our Operators Daily Inspection Sheets

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SAFETY

To be using the UIS Power Push™ in the safe and correct manner, the operator should have completed the following before using the equipment:

- Make sure the person using the Carrier Excavator has all of the correct qualifications and is competent in the use of an excavator.
- Make sure the correct PPE is being worn, items such as Safety Glasses, Hard Hat, Safety Toe Cap Boots, High Visibility Work Wear and Protective Gloves. Additional PPE may be required dependant on Site Specific requirements.
- Ensure it is as safe working environment before attaching the product to the carrier excavator, i.e. inside a clear and safe area away from members of public etc.



SAFETY MANAGEMENT SYSTEM		Date: 01/11/2012	Doc No: UISQM0010
RISK ASSESSMENT		Author:	Reviewer:
Activity / Task / Job		Identified Hazards	Assessment
1. Digging / Excavating	Use of excavator	1. Collapse of excavator bucket / boom 2. Contact with overhead power lines 3. Contact with underground utilities 4. Contact with other workers / vehicles 5. Contact with other equipment	1. Yellow 2. Red 3. Red 4. Yellow 5. Yellow
2. Moving / Transporting	Use of excavator	1. Collapse of excavator bucket / boom 2. Contact with overhead power lines 3. Contact with underground utilities 4. Contact with other workers / vehicles 5. Contact with other equipment	1. Yellow 2. Red 3. Red 4. Yellow 5. Yellow
3. Working / Operating	Use of excavator	1. Collapse of excavator bucket / boom 2. Contact with overhead power lines 3. Contact with underground utilities 4. Contact with other workers / vehicles 5. Contact with other equipment	1. Yellow 2. Red 3. Red 4. Yellow 5. Yellow
4. Maintenance / Servicing	Use of excavator	1. Collapse of excavator bucket / boom 2. Contact with overhead power lines 3. Contact with underground utilities 4. Contact with other workers / vehicles 5. Contact with other equipment	1. Yellow 2. Red 3. Red 4. Yellow 5. Yellow
5. Use of equipment	Use of excavator	1. Collapse of excavator bucket / boom 2. Contact with overhead power lines 3. Contact with underground utilities 4. Contact with other workers / vehicles 5. Contact with other equipment	1. Yellow 2. Red 3. Red 4. Yellow 5. Yellow
6. Use of equipment	Use of excavator	1. Collapse of excavator bucket / boom 2. Contact with overhead power lines 3. Contact with underground utilities 4. Contact with other workers / vehicles 5. Contact with other equipment	1. Yellow 2. Red 3. Red 4. Yellow 5. Yellow


ADVISORIES & CONTROL MEASURES

- The product not to be used as a lifting aid at any time
- The driver / operator must have a valid CITB / CPC card
- Speed of operations dictated by specific site conditions
- The excavator must be sited on good firm ground
- Drivers to be aware of Permit to Work controls and restrictions
- Live gas pipelines to be protected against impact damage
- Banksman to control close working
- Underground services to be protected
- Site set out to restrict public access (barriers/herras fencing)
- All works to be contained within the site area no working over live footpaths or traffic
- Mechanical excavators to work within demarcated site, no swinging buckets across or into live carriageway
- Any existing gas pipe and other utilities to be adequately protected against accidental contact / damage
- Machinery to be adequately maintained
- Operator to perform pre-start checks of all connectors
- No excessive pressure to be applied
- Spill kits to be readily available
- Training given in the correct handling and use of hand tools
- Correct maintenance of hand tools. Replace or maintain as necessary
- Use the correct tool for the job and appropriate PPE, e.g. gloves, eye protection etc. as instructed
- Full compliance with NRSWA (New Roads and Streetworks Act)
- Site barriered off, signed and guarded with appropriate signs, care for the pedestrian



UIS LEVEL HEAD™

Historically there have been a number of serious personal injuries / near misses associated with the handling and manipulation of coiled pipe during insertion activities. One of the major difficulties encountered whilst pushing / inserting and winching pipe is when the new main comes into an open service / connection excavation pit. Due to the P.E. pipe being coiled, this has natural energised pressure resulting in the pipe naturally springing upwards. The UIS Level Head™ resolves this problem with ease and is simple to install.



The UIS Level Head™ is a approximately 1 meter long weighted section of recycled plastic that is available in all diameter ranges that enables a safer, more compliant and sustainable product allowing a more fluent insertion operation.



KEY BENEFITS

TIME · COST · ENVIRONMENT

- Can be installed onto lead end of coiled pipe within 2 minutes
- Low cost / very effective product
- Simple design, simple to install, no special training required
- Manufactured from recycled plastics
- Sustainable product reducing overall P.E. wastage and associated time

SAFETY · ENGINEERING

- Significantly reduces stored energy contained in lead end of coiled pipes
- Eliminates operatives entering excavations to manipulate pipe through the next host section of main due to the pipes natural energy contained in the end
- Enables the handling of coiled pipe easier and safer on ground surface in the preparation of the coiled pipe from trailer to host main

- Significantly reduces the scraping / grating of the inserted pipe on the up-side of the host main, reducing the wall damage throughout the inserted pipe and ensuring cleanliness of pipe
- Could be utilised and have same benefits and effects for traditional winching activities
- The UIS Level Head™ has more enhanced protection thus eliminating cut back and wastage in preparation for connections
- Reduces overall tension and resistance encountered in insertions

INSERT

ALIGN

CONNECT



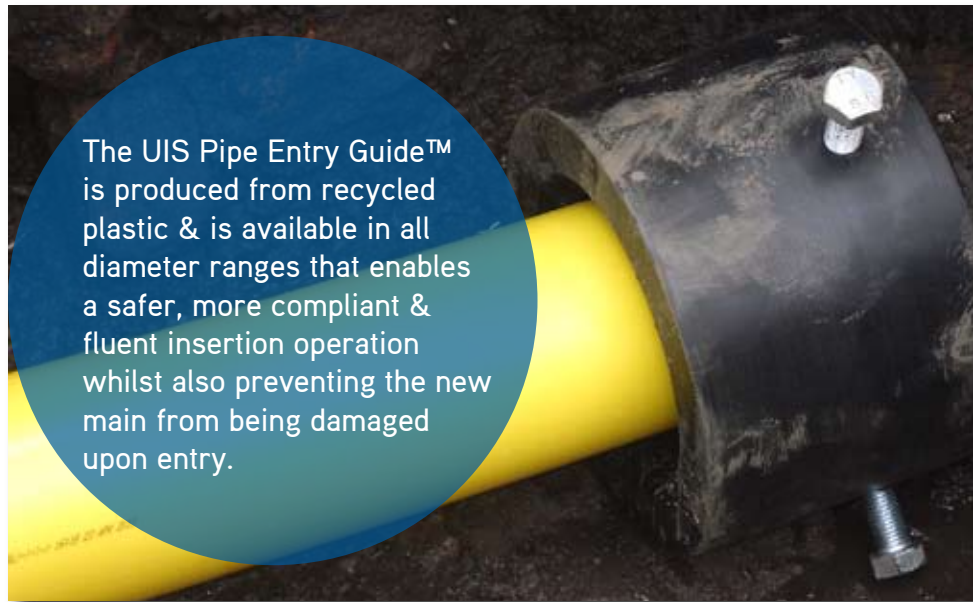
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UIS PIPE ENTRY GUIDE™

A common occurrence whilst inserting pipe through pushing or winching is that the new P.E. main catches the original host main, therefore scraping the pipe as it enters. With the UIS Pipe Entry Guide™, this problem is eradicated. The UIS Pipe Entry Guide™ is a low-cost, lightweight and easy fit solution to solving the problems incurred while inserting P.E. pipe into cast / spun / ductile iron or steel mains.



KEY BENEFITS

TIME · COST · ENVIRONMENT
SAFETY · ENGINEERING

- Can be installed onto the existing host main within 2 minutes
- Low cost / very effective product
- Simple design, simple to install, no special training required
- Manufactured from recycled plastics
- Sustainable product reducing overall P.E. wastage and associated time
- Significantly reduces the scraping / grating of the inserted pipe on the up-side of the host main, reducing the wall damage throughout the inserted pipe and ensuring cleanliness of pipe
- Can be utilised and have same benefits and effects for traditional winching activities
- Making sure no damage occurs to the new P.E. main being inserted, and also making the insertion process a lot smoother and simple

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STOCK LIST / SPARE & REPLACEMENT PARTS

HEAD

Item	Quantity	Order Code	Notes
1.5 Tonne Universal Head	1	UIS/PP/001	
3 Tonne Universal Head	1	UIS/PP/002	Made to order
5 Tonne Universal Head	1	UIS/PP/003	Made to order
Head Reducer Bushes	4	UIS/PP/004	
25mm Head Attachment Pins	2	UIS/PP/005	
30mm Head Attachment Pins	2	UIS/PP/006	
35mm Head Attachment Pins	2	UIS/PP/007	
40mm Head Attachment Pins	2	UIS/PP/008	
6mm Lynch Pins	2	UIS/PP/009	
16mm Lock Nuts	4	UIS/PP/010	
Retaining Washer	1	UIS/PP/011	
Nylon Head Wear Shim	1	UIS/PP/012	

FRAME

Item	Quantity	Order Code	Notes
12mm Hinge Pin	1	UIS/PP/013	
12mm Hinge Nut	1	UIS/PP/014	
Bottom Pin Clamp Plates [Side Swivel Plate]	2	UIS/PP/015	
10 x 30 Plate Bolts	4	UIS/PP/016	

SHIM SETS

Item	Quantity	Order Code	Notes
50mm with Counter Sunk Bolts	2	UIS/PP/017	Made to order
63mm with Counter Sunk Bolts	2	UIS/PP/018	
75mm with Counter Sunk Bolts	2	UIS/PP/019	
90mm with Counter Sunk Bolts	2	UIS/PP/020	
110mm with Counter Sunk Bolts	2	UIS/PP/021	Made to order
125mm with Counter Sunk Bolts	2	UIS/PP/022	
140mm with Counter Sunk Bolts	2	UIS/PP/023	Made to order
160mm with Counter Sunk Bolts	2	UIS/PP/024	Made to order
180mm with Counter Sunk Bolts	2	UIS/PP/025	
200mm with Counter Sunk Bolts	2	UIS/PP/026	Made to order
213mm with Counter Sunk Bolts	2	UIS/PP/027	
215mm with Counter Sunk Bolts	2	UIS/PP/028	
225mm with Counter Sunk Bolts	2	UIS/PP/029	
250mm with Counter Sunk Bolts	2	UIS/PP/030	Made to order
300mm with Counter Sunk Bolts	2	UIS/PP/031	
315mm with Counter Sunk Bolts	2	UIS/PP/032	Made to order
355mm with Counter Sunk Bolts	2	UIS/PP/033	Made to order
400mm with Counter Sunk Bolts	2	UIS/PP/034	

SHIM CLAMPING BOLTS

Item	Quantity	Order Code	Notes
Counter Sunk Bolts	6	UIS/PP/035	Made to order

HYDRAULICS

Item	Quantity	Order Code	Notes
Feed Hose	2	UIS/PP/036	
1/4 inch Bulk Head Fittings	2	UIS/PP/037	
Link Hose	2	UIS/PP/038	
Tea Adaptor	2	UIS/PP/039	
Male / Female Adaptor	4	UIS/PP/040	
Dowty Washer	6	UIS/PP/041	

Continued over page



LEADING THE WAY IN UTILITY INNOVATIONS

STOCK LIST / SPARE & REPLACEMENT PARTS

HYDRAULICS *Continued*

Item	Quantity	Order Code	Notes
1/2 inch x 1/4 inch Adaptor	2	UIS/PP/042	
1/2 inch Quick Release Male Coupling	1	UIS/PP/043	
1/2 inch Quick Release Female Coupling	1	UIS/PP/044	
1/2 inch Dowty	2	UIS/PP/045	
Rams	2	UIS/PP/046	
Ram Top Pin	1	UIS/PP/047	
Ram Bottom Pin	1	UIS/PP/048	
6mm Bottom Pin Grub Screws	2	UIS/PP/049	
Ram Guard	1	UIS/PP/050	
Ram Guard Bolts	2	UIS/PP/051	

UIS LEVEL HEAD™ ATTACHMENTS

Item	Quantity	Order Code	Notes
50mm UIS Level Head™ Attachment	1	UIS/PP/052	Made to order
63mm UIS Level Head™ Attachment	1	UIS/PP/053	
75mm UIS Level Head™ Attachment	1	UIS/PP/054	
90mm UIS Level Head™ Attachment	1	UIS/PP/055	
110mm UIS Level Head™ Attachment	1	UIS/PP/056	Made to order
125mm UIS Level Head™ Attachment	1	UIS/PP/057	
140mm UIS Level Head™ Attachment	1	UIS/PP/058	Made to order
160mm UIS Level Head™ Attachment	1	UIS/PP/059	Made to order
180mm UIS Level Head™ Attachment	1	UIS/PP/060	

UIS PIPE ENTRY GUIDE™

Item	Quantity	Order Code	Notes
3 inch UIS Pipe Entry Guide™	1	UIS/PP/061	
4 inch UIS Pipe Entry Guide™	1	UIS/PP/062	
6 inch UIS Pipe Entry Guide™	1	UIS/PP/063	
8 inch UIS Pipe Entry Guide™	1	UIS/PP/064	
10 inch UIS Pipe Entry Guide™	1	UIS/PP/065	Made to order
12 inch UIS Pipe Entry Guide™	1	UIS/PP/066	Made to order
14 inch UIS Pipe Entry Guide™	1	UIS/PP/067	Made to order
16 inch UIS Pipe Entry Guide™	1	UIS/PP/068	Made to order
18 inch UIS Pipe Entry Guide™	1	UIS/PP/069	Made to order
20 inch UIS Pipe Entry Guide™	1	UIS/PP/070	Made to order
22 inch UIS Pipe Entry Guide™	1	UIS/PP/071	Made to order
24 inch UIS Pipe Entry Guide™	1	UIS/PP/072	Made to order

PRODUCT STORAGE & CONTENTS

Item	Quantity	Order Code	Notes
Unit Storage Box	1	UIS/PP/073	
Shim Storage Box	1	UIS/PP/074	
Holdall Bag	1	UIS/PP/075	
Lifting Handles	2	UIS/PP/076	
17mm Spanner	1	UIS/PP/077	
5mm Allen Key	1	UIS/PP/078	
Rubber Floor Liner	1	UIS/PP/079	
Operators Manual	1	UIS/PP/080	
Product Risk Assessment	1	UIS/PP/081	
'Two Man Lift' Stickers	2	UIS/PP/082	
Wheels for Box	2	UIS/PP/083	Made to order

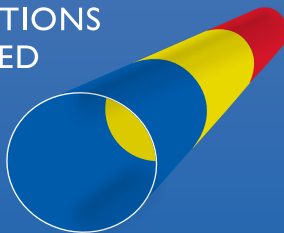
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